

# EUROPEAN PATENT OFFICE

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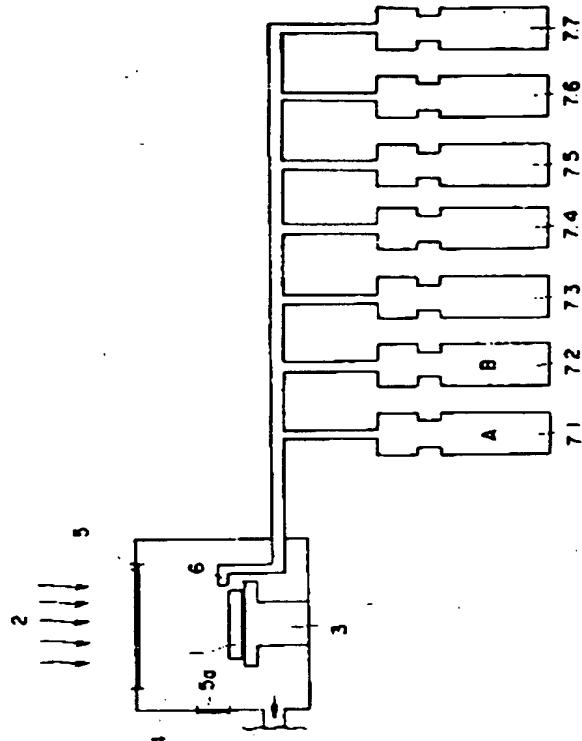
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TITLE : PRODUCTION OF MULTILAYERED THIN FILM



**ABSTRACT :** PURPOSE: To form easily multilayered thin films of which the refractive indices change continuously or discretely at a low temp. by forming continuously the thin films by using a photovapor reaction and changing the compsn. of reactive gases so that the thin films are formed uniformly in a large area.

CONSTITUTION: A gaseous phase reactant and an oxygen-contg. precursor are mixed with a diluting gas, carrier gas and sensitizing material to a prescribed compsn. ratio in feeder systems 7.1~7.7 including a control system for the flow rate thereof and are introduced into a reaction vessel 4 contg. a sample 1 on a susceptor 3. An electromagnetic wave 2 is then made incident to the vessel 4 through the light transmission window 5 thereof and the deposition of the multilayered dielectric film is started. The compsn. of the gaseous phase reactant in the above-described gaseous mixture is thereafter continuously changed by controlling the flow rate of the gases for the respective components with a flow rate control device in each device 7. The multilayered dielectric films of which the refractive index distributions are successively changed are thus formed on the substrate. The multilayered dielectric films having various refractive index distributions are obtd. according to the way of controlling the flow rate of the above-described gases in the above-mentioned way.

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